$Mg^{2+}_{(aq)}$, $Na^{+}_{(aq)}$, $Ca^{2+}_{(aq)}$, $Zn^{2+}_{(aq)}$, $K^{+}_{(aq)}$, $Fe^{2+}_{(aq)}$, $Fe^{3+}_{(aq)}$, $Mn^{2+}_{(aq)}$,

→ Any of the above solutions are safe to dispose of down the sink(aqueous) or in the garbage (solid). Note – Only $Mn^{2+}_{(aq)}$ should be disposed of down the sink. All other forms ($Mn^{n+}_{(aq)}$) should be treated to form $Mn^{2+}_{(aq)}$.

$Pb^{2+}_{(aq)}$, $Al^{3+}_{(aq)}$, $Sn^{2+}_{(aq)}$, $Sn^{4+}_{(aq)}$, $Cr^{2+}_{(aq)}$, $Cr^{3+}_{(aq)}$, $Cd^{2+}_{(aq)}$, $Co^{2+}_{(aq)}$, $Hg^{2+}_{(aq)}$, $Hg^{+}_{(aq)}$, $Sr^{2+}_{(aq)}$, $Mn^{n+}_{(aq)}$,

→ Should be stored for proper disposal

Acids:

→ Most School Laboratories use $H_2SO_{4(aq)}$, $HCl_{(aq)}$, $HNO_{3(aq)}$, $H_3PO_{4(aq)}$, $H_2SO_{3(aq)}$, $CH_3COOH_{(aq)}$) as acids. These can all be safely neutralized and disposed of down the sink. All treatment should be completed in a fume hood using gloves, a laboratory coat and protective goggles. Acids should be diluted to 3.0 mol/L or less. Neutralize the acids using sodium hydroxide solutions ($NaOH_{(aq)}$) (purchase Gillet's Lye at grocery stores for this purpose as it is much less costly).

NOTE: this neutralization will produce heat and solutions should be left to cool before disposing.

Procedure: Place diluted acid in large container filling to less than half of the volume of the container. Add three or four drops of bromothymol blue indicator. Add 3 mol/L sodium hydroxide solution (12 g/100 mL) slowly until solution just turns blue. Cool and dispose of solution down the drain.

Bases:

→ Most School Laboratories use $NH_4OH_{(aq)}$ as their only aqueous base. Other bases include the prepared solutions of hydroxides. Most can be safely neutralized and disposed of down the sink. Exceptions $BaOH_{2\,(aq)}$, $Ni(OH)_{2(aq)}$, see above metal ions. All treatment should be completed in a fume hood using gloves, a laboratory coat a, see and protective goggles. Bases should be diluted to 3.0 mol/L or less. Neutralize the base using hydrochloric acid $HCl_{(aq)}$ solutions (purchase Muriatic Acid at hardware stores for this purpose as it is much less costly. The muriatic acid must be diluted to at least triple its volume).

NOTE: this neutralization will produce heat and solutions should be left to cool before disposing.

Procedure: Place diluted base in large container filling to less than half of the volume of the container. Add three or four drops of bromothymol blue indicator. Add muriatic solution slowly until solution just turns yellow. Cool and dispose of solution down the drain.